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Development Of A Model United Nations Website

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REGIS UNIVERSITY

SCHOOL FOR PROFESSIONAL STUDIES

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Development of a Model United Nations Website

PROFESSIONAL PROJECT

Keir Paesel
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Regis University
School for Professional Studies
MSCIT Program

Certification of Authorship of Professional Project Work

Submitted to: Timothy McKenzie

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Date of Submission: December 15, 2005

Title of Submission: Development of a Model United Nations Website

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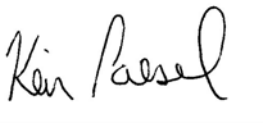
Student's Signature: 

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Professional Project Title: Development of a Model United Nations Website

Advisor's Declaration: I have advised this student through the Professional Project Process and approve of the final document as acceptable to be submitted as fulfillment of partial completion of requirements for the MSC 696 or MSC 696B course. The student has received project approval from the Advisory Board or the 696A faculty and has followed due process in the completion of the project and subsequent documentation.

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Project Paper Revision/Change History Tracking

Version	Submitted To	Date	Changes
Original	Tim McKenzie Mike Nims	Oct 15, 2005	Original submission
Revision #1	Tim McKenzie Mike Nims	Oct 25, 2005	Addition of abstract. Extensive revisions to sections 1.6, 2.1, 3.6 4.3, 4.6, 5.3.
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Abstract

The purpose of this project was to create a website to support the annual Cairo American College Model United Nations (CACMUN) conference. Cairo American College is a private, non-profit, K-12 school for expatriate children living in Cairo, Egypt. Model United Nations (MUN) is an educational simulation of the United Nations. During MUN conferences, students assume the role of delegates from various countries, and work with peers to discuss and solve world issues.

Each year, approximately 200 students from ten schools attend CACMUN. Most schools come from different countries in the Middle East. The conference needs to be advertised to potential guests. Information and documents must be distributed to schools and delegates actually attending. The website also needs to help register and collect data from all attendees. Finally, educational interaction between the students should be encouraged.

A database driven website was programmed to address these needs. Dynamic pages use PHP to access a local MySql installation that stores conference information. The resulting website successfully facilitated the CACMUN 2005 conference on October 20-23, 2005.

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1. Introduction

1.1 Problem statement and business needs

For the last 26 years, Cairo American College[1] has sponsored an annual Model United Nations conference (CACMUN). Cairo American College is a private K-12 school that services approximately 1300 students in the expatriate community of Cairo, Egypt. Model United Nations is a common extra curricular activity in which students simulate the processes of the United Nations. Each CACMUN is attended by approximately 200 students from ten schools. Schools generally come from around the Middle East, but sometimes as far as Indonesia, Europe and Mexico. It's a high profile event and sometimes has well known keynote speakers such as Anwar Sadat's widow.

A comprehensive website is needed to advertise and manage both the conference and the club. Documents and information need to be shared with conference attendees. Schools need to be able to register their students (i.e. their names, what countries they will represent and information needed to house them, such as dietary restrictions.) Information about sponsors, school details and arrival and departure information must also be collected. Finally, it would also be helpful to add a discussion forum for students.

[1] http://cacegypt.org

1.2 Statement of project goals

The website will:

- Advertise the club and conference. Each year, about 10 schools attend the conference. Since some schools choose not to return in subsequent years, new schools must be found. Potential new schools generally hear about CACMUN initially by word of mouth or from other websites, such as that of The Hague International Model United Nations (THIMUN) website. THIMUN is a much bigger MUN conference.
- Distribute forms, lists and information relevant to the club and conference. A variety of forms need to be distributed, including school application forms and leadership applications. Posting Frequently Asked Questions (FAQs) greatly reduces the amount of repetitive email inquiries.
- Register schools, delegates and sponsors with all necessary information. Approximately 200 delegates and sponsors attend each year. Personal data is essential for housing them and for use in conference documents such as badges and programs.
- Collect arrival and departure information from each school. Arrival information is very important, as it is used to schedule students and buses to pick up visiting schools, which come from around the Middle East.

- Have a forum to facilitate dialog and cooperation between delegates from different schools. In the month prior to the conference, students from different schools can discuss global issues that the conference will address. Students can cooperate to find solutions. Since many schools have small delegations (10 students or fewer), it is important that these students have an opportunity to network with students at larger schools, so they can quickly finding potential diplomatic partners at the conference.

1.3 Current solution

The conference currently has no existing way of registering students. Without this website sponsors from other schools would have to fax or email all pertinent information for 200 delegates, twenty sponsors and ten schools. Delegate information includes student name, the country they are representing, dietary restrictions (this years conference coincides with Ramadan, so many students will be fasting), and other housing considerations. Sponsor information is similar but also includes their email address. School information includes their address, phone numbers and arrival and departure information. The information is used to compile a program of events and housing lists. If the information were collected by email, it would have to be cut and pasted into other appropriate applications, such as a word processor and spreadsheet. It is likely that each of the ten

schools would send the requested information in inconsistent formats, making the data difficult to compile and prone to the introduction of errors.

There is currently no way prior to the conference for delegates to communicate with delegates from other schools. Therefore, large schools have an advantage over smaller schools. For example, our school has 50 of the 200 delegates participating. These 50 delegates know each other very well, and are able to quickly form alliances on any given issue.

1.4 Previous solution

From 2000–2004, a website existed that registered students. The website was created by volunteer Matthew Kleinosky[2], a website programmer that worked locally on US Agency for International Development projects in Egypt. However, Mr. Klienosky returned to the US in 2004. He maintained the website from his

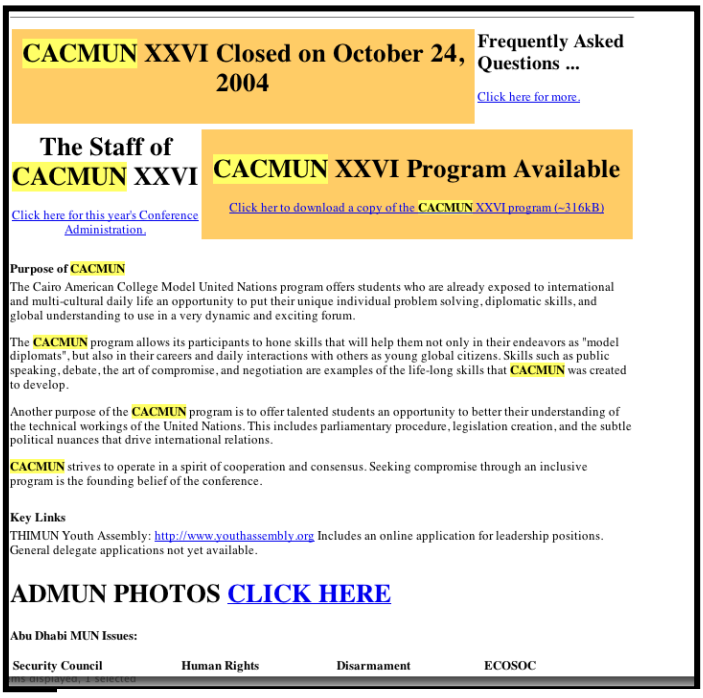


Figure 1: Previous CACMUN website

[2] http://kleinosky.com/

location in the US during 2004. However, coordination was challenging because of his location. Furthermore, Mr. Klienosky programmed the website in .asp. CAC is an all Macintosh school, so the website had to be hosted externally, at a relatively high cost.

1.5 Barriers and/or issues

The original website and domain name were registered in the name of a teacher who was tragically killed in an SCUBA diving accident two years ago. Mr. Klienosky knew all the relevant passwords, so it was possible to maintain the website. However, paying for the website and making account changes was problematic. Keir Paesel, the current MUN sponsor, was unable to easily transfer the original domain name (cacmun.org) to a lower cost service provider because the domain name was registered by the deceased. This problem was solved by registering a new domain name of cacmun.net and temporarily forwarding the old domain name of cacmun.org to cacmun.net. This is, however, inconvenient as many search engines and existing web resources list the conference website by the old domain name.

1.6 Scope

The new website will:

- Serve as a central location for information and files related to the CACMUN conference.

- Include a database to register the details of attending delegates, sponsors and schools.
- Include an online email system for promoting timely communication between the 55 CACMUN club members. This email system will allow club sponsors and student officers to email specific groups within the MUN club. For example, a forum president might email just the delegates in their forum. (In this context, a 'forum' is an organ of the United Nations. For example, the Security Council, General Assembly, or Economic and Social Council (ECOSOC)).
- Feature a message forum to promote pre-conference educational activity.

To limit the scope of the project, some potentially helpful features will be left out. These features may be included in future iterations of the website. Some features that will not be included are:

- Allowing students to "subscribe" to forum threads, providing them with email notification of forum activity that they are interested in.
- Allow for individual forum logins that can be updated online. Instead, there will be a login for each school.
- The ability to pay conference fees online. This would be very convenient for visiting schools, but would require the use of a 3rd party transaction provider, costing the club money. Also, the legal

complexities of accepting money for services in Egypt are difficult to ascertain.

- Transferring the website to school servers. The school web server does not currently have any database technology installed. Also, moving the website in three months prior to the conference would be risky – any problems would result in a loss of service during important pre-conference activity.

1.7 Summary

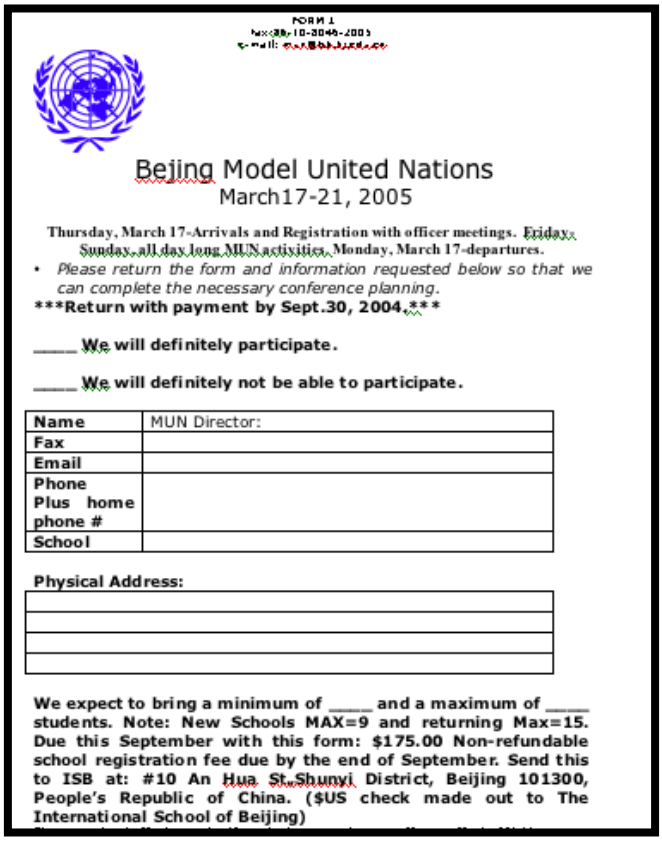
The creation of an online and dynamic website and database for the Cairo American College Model United Nations conference is projected to take six months. Expected benefits include a reduction in the time required to administer the conference and a higher quality conference. There are no known significant barriers to implementation.

2 Chapter Two: Research

Research consisted of investigating and reviewing existing solutions and the technologies available for creating a new solution.

2.1 Review of existing solutions available

No commercially available software package is designed specifically to support MUN conferences. The largest MUN conference in the world is the annual "The Hague International Model United Nations" (THIMUN[3]) conference, which is attended annually by approximately 3000 students from 200 schools, including CAC. This conference is large enough



Beijing Model United Nations
March17-21, 2005

Thursday, March 17-Arrivals and Registration with officer meetings. Friday-Sunday, all day long MUN activities. Monday, March 17-departures.

- *Please return the form and information requested below so that we can complete the necessary conference planning.*

Return with payment by Sept.30, 2004.

_____ We will definitely participate.

_____ We will definitely not be able to participate.

Name	MUN Director:
Fax	
Email	
Phone Plus home phone #	
School	

Physical Address:

We expect to bring a minimum of _____ and a maximum of _____ students. Note: New Schools MAX=9 and returning Max=15. Due this September with this form: $175.00 Non-refundable school registration fee due by the end of September. Send this to ISB at: #10 An Hua St.Shunyi District, Beijing 101300, People's Republic of China. ($US check made out to The International School of Beijing)

Figure 2: BEIMUN participation form

[3] http://thimun.org

to pay a year round staff of professionals to administer the conference. THIMUN's website is very similar to the one that will be developed. The THIMUN website uses PHP and MySQL for it's interactive web pages.

Although dozens of other conferences exist world wide, few use anything other than email, fax and spreadsheets to administer their conference. Figure 2 shows a typical form used by a popular conference (BEIMUN) to gather school data. Several similar forms from this conference and others collect delegate and sponsor data. These forms are usually emailed to participating schools and then either emailed, faxed or mailed back to the conference. Such forms are simple and easy to use, but error prone and time consuming because all the data must be typed into a spreadsheet or database.

2.2 Discussion of other available technologies

The Internet is an ideal medium to host a registration system for a Model United Nations conference. All international schools have Internet access and the associated charges are cheap compared to the use of faxes and telephone calls. A variety of popular web programming technologies exist, including Java, Microsoft .NET and several popular scripting languages.

All of these programming languages can work with any of the popular databases. The actual database used is largely inconsequential, as almost

all databases support standard SQL commands. Popular databases include Microsoft Access, Microsoft SQL Server, Oracle, MySql and PostSgre. Microsoft Access is cheap. Microsoft SQL Server is more expensive, but is already owned by many schools for other purposes. Oracle is highly scalable, but is much more powerful than needed and too expensive for most schools. The demands placed on a database by a registration system to support a few hundred records are minimal, which makes low cost or free databases such as PostSgre or MySql ideal.

2.3 Other scripting languages

Popular scripting languages used for web programming include PHP, Perl, C, and Python. Such scripting languages are designed to be highly extensible[4], which has resulted in them maturing greatly since their creation. These languages are often free and extremely convenient

Scripting languages work by interfacing with a web server, either through the "Common Gateway Interface" (CGI), or an appropriate "module" (extension) to the web server. [5] When the web server receives a request from a client that requires a script to run, it passes the request to the interface or module, which runs the appropriate script. Scripts are

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[4] Richard Peterson, Linux Programming, A Beginner's Guide (Berkeley: Osborne/McGraw Hill, 2001) 174.

[5] "Language on the Internet". Web Developers Notes. 9 Sep. 2005. < http://www.webdevelopersnotes.com/basics/languages_on_the_internet.php3 >

interpreted each time they are run, which generally makes them slower than other solutions such as Java and Microsoft .NET. However, they are fast enough for most applications and would be more than fast enough for the CACMUN database, which will only have 200 users (180 students and 20 teachers).

2.4 Java

Java provides a rich assortment of classes for use with databases, the Internet and networking in general.[6] The java.servlet package contains classes and interfaces that define servlets. Servlets are web server based java programs that process and transmit data to and from client web browsers and databases. The java.rmi package allows "remote method invocation"; the ability to run java objects on remote computers. The java.net package allows packets of information to be transmitted. This package is generally used for transmitting audio and video over the Internet. Finally, the java.sql package provides classes convenient to accessing most popular relational databases through Java Database Connection (JDBC) drivers.

2.5 Microsoft .Net

Microsoft .NET competes directly with Java. In 1998, Microsoft ended their development of J++, a Microsoft implementation of Java. The J++

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[6] Deitel and Deitel. Java, How to Program, 3rd edition. (New York: Prentice Hall, 1999) 887-997.

implementation at that time was used as the beginning of .NET.[7] While Java originally chose to be interpreted, .NET chose "Just in Time" (JIT) compilation to improve performance.

.NET is a framework, not a specific language. Microsoft has created .NET compatible implementations of several popular programming languages including C++, Visual Basic and J#, which is the current implementation of J++. In addition, Microsoft has created a popular new language called C#, which is considered similar to Java. Many third party application developers have also created .NET compatible implementation of popular programming languages such as Perl, Fortran and Lisp.

Java and Microsoft .NET have similar performance and functionality. The biggest difference between the two is that the use of Sun's Java programming language restricts development to the Java programming language itself. However, the implementation can run on most popular platforms including Microsoft Windows, Linux, OS X and Unix variants such as IBM's AIX.

Conversely, using Microsoft .NET allows developers to use a variety of popular programming languages, however, restricts the development and implementation to a Microsoft based server.

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[7] "Microsoft .NET" Wikipedia Online Encyclopedia. 17 Sep 2005. <http://en.wikipedia.org/wiki/Microsoft_.NET>

2.6 Why PHP/MySql as opposed to other tools

Using PHP as a programming language and MySQL as a database provides the most practical and cost-effective solution for CACMUN. Cairo American College is an Apple-computer based campus. A few Microsoft servers exist on campus for administrative systems that are not available on OS X. However, the majority of servers and almost all other client machines are Apple computers. This makes the use of Microsoft .NET challenging.

Java would be an excellent language to implement the CACMUN website and database. Java is free, versatile and easy to use with OS X, which supports Java as a "first class citizen". [8] The CACMUN website is currently hosted on a low cost web service provider that does not support Java. However, future iterations of the website will be hosted on the school's OS X based web server and will be implemented in Java. The school already owns a Filemaker Pro database server, so future iterations of the website will use Filemaker Pro or continue a low cost/free database such as MySql.

Cacmun.net is hosted on a Linux based web service provider[9] that provides PHP and MySql. Although unmodified PHP does not scale as well as

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[8] "OS X" Wikipedia Online Encyclopedia. 3 Sep. 2005. <http://en.wikipedia.org/wiki/Mac_OS_X>

[9] http://icdsoft.com

Java[10], it is more than capable of meeting the very modest requirements of the CACMUN website.

2.7 Summary

Several excellent technologies exist that are appropriate for the CACMUN website including MySQL, scripting languages PHP and Java. However, the current web host for the website only supports PHP and Perl. Although the website could be relatively easily ported to another web provider that supported either Java or .NET, their would be an associated cost (for .NET) or time constraint for Java. Java could be used on the existing school server, but would involve some extra complications such as configuring the web server to host an additional domain (cacmun.net), installing MySQL on the web server or an appropriate computer and moving the website during the planned development time, which is just prior to the CACMUN conference.

To ensure the availability of the CACMUN website, it will be left at it's current web host. MySQL and PHP will be used because both PHP and MySQL are provided on the current web host provider.

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[10] Herrington, Jack. "The PHP Scalability Myth". OnJava Online. 15 Oct 2003. <http://www.onjava.com/pub/a/onjava/2003/10/15/php_scalability.html>

3 Chapter Three: Project Methodology

3.4 Research Methods Used

Research consisted of a literature search and investigation of what systems other Model United Nations conferences have to help manage their conferences. CACMUN attends several other MUN conferences each year, including THIMUN, Beijing International Model United Nations (BEIMUN) and Abu Dhabi Model United Nations (ADMUN). Attending these conferences allows the CACMUN club sponsor to see and evaluate how other MUN conferences are solving the same business problem. In addition, sponsors from other schools that attend CACMUN often offer helpful suggestions and observations.

3.5 Software Development Life-Cycle Used

The Software Development Life-Cycle was used for this project. This development model was appropriate for this project, because the project is relatively well defined in nature and has a relatively predictable budget and timeline[11].

[11] Wysocki, Robert and Rudd McGary. Effective Project Management, 3rd Edition. (Indianapolis: Wiley Publishing, 2003) 17-48.

Alternative project development methodologies considered include

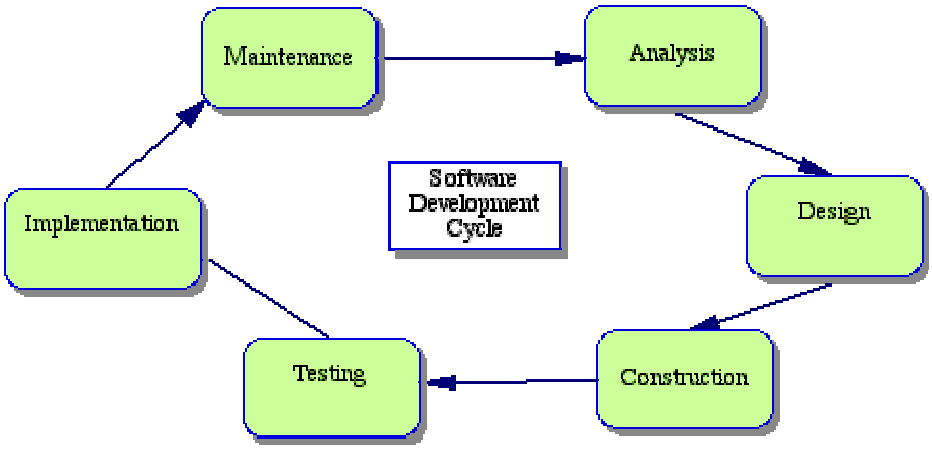


Figure 3: Software Development Cycle

"Adaptive" and "Extreme". However, the project was well defined enough that these methodologies did not offer any significant advantage.

An "Adaptive Project Framework" [12] would also be an appropriate project development methodology. The Adaptive Framework promotes "incremental results early and often" and working closely with the client to make positive changes to the work plan at each stage of completion. This project, however, was self implemented – the developer was also the client. So, many of the strategies of the adaptive framework, such as continuous questioning, were unnecessary.

[12] Wysocki, 265-278.

"Extreme Project Management" (xPM) was the third project management framework considered. However, xPM was the least appropriate management framework for this project. xPM is used for projects that need

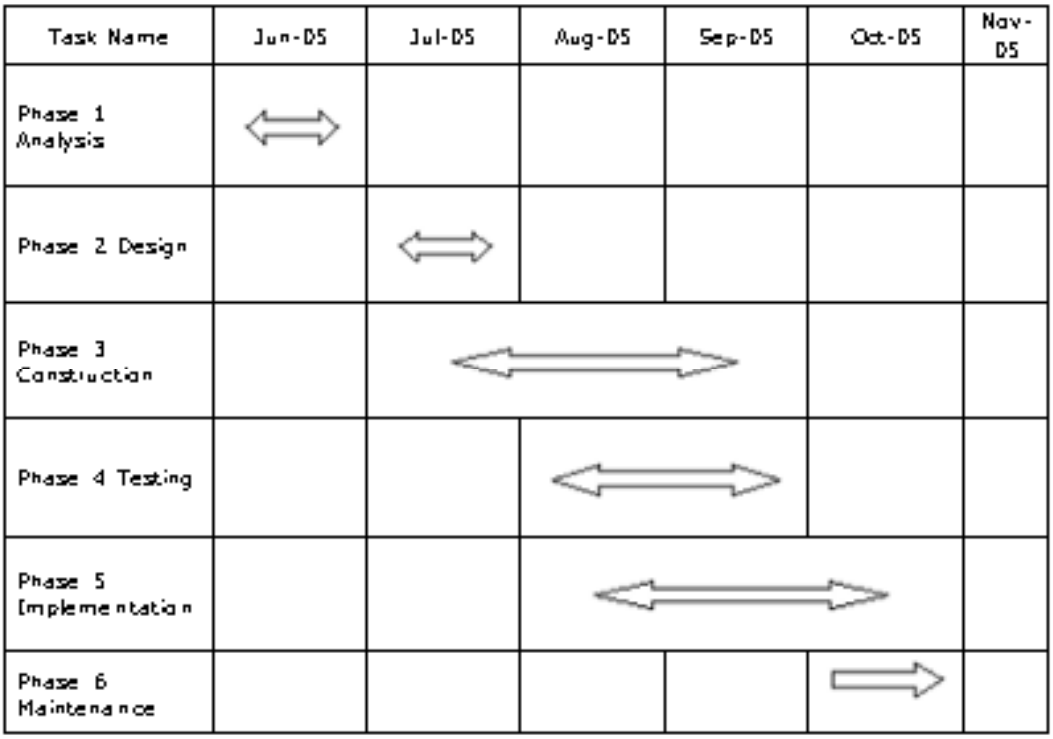


Figure 4 GANTT Chart for CACMUN Website Project

to be developed quickly and have a high level of uncertainty and change. [13] Extreme projects are for extreme circumstance and they often fail. None of these characteristics apply to the current project, so they are inappropriate frameworks for the current situation.

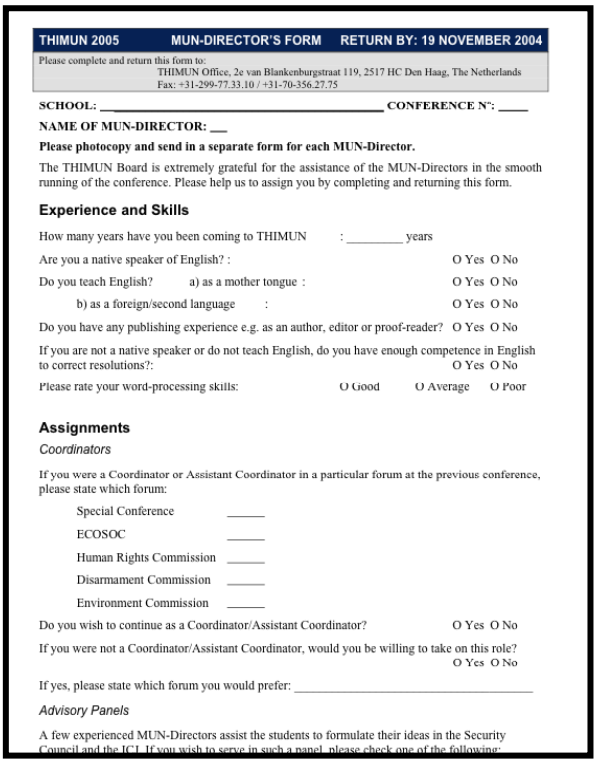
[13] Wysocki, 332

3.5.1 Research and analysis phase

The research and analysis phase of the project was in June 2005. During this phase, various solutions and technologies were considered and evaluated.

3.5.1.1 Problem Analysis

The problem was well defined. Data must be collected from all delegates, sponsors and schools. A database from the previous solution is still extant, so this provided a source to review. However, the previous database required unnecessary data from visiting schools, making data entry time consuming for users. Because the data entry was so time consuming, visiting schools often had students enter their data (instead of an adult), which resulted in poor data quality. For example, students' names were often misspelled or entered in inconsistent formats such as all



THIMUN 2005 MUN-DIRECTOR'S FORM RETURN BY: 19 NOVEMBER 2004

Please complete and return this form to:
THIMUN Office, 2e van Blankenburgstraat 119, 2517 HC Den Haag, The Netherlands
Fax: +31-299-77.33.10 / +31-70-356.27.75

SCHOOL: _____ CONFERENCE N°: ____

NAME OF MUN-DIRECTOR: __

Please photocopy and send in a separate form for each MUN-Director.

The THIMUN Board is extremely grateful for the assistance of the MUN-Directors in the smooth running of the conference. Please help us to assign you by completing and returning this form.

Experience and Skills

How many years have you been coming to THIMUN : _____ years

Are you a native speaker of English? : O Yes O No

Do you teach English? a) as a mother tongue : O Yes O No

b) as a foreign/second language : O Yes O No

Do you have any publishing experience e.g. as an author, editor or proof-reader? O Yes O No

If you are not a native speaker or do not teach English, do you have enough competence in English to correct resolutions?: O Yes O No

Please rate your word-processing skills: O Good O Average O Poor

Assignments

Coordinators

If you were a Coordinator or Assistant Coordinator in a particular forum at the previous conference, please state which forum:

Special Conference _____
ECOSOC _____
Human Rights Commission _____
Disarmament Commission _____
Environment Commission _____

Do you wish to continue as a Coordinator/Assistant Coordinator? O Yes O No

If you were not a Coordinator/Assistant Coordinator, would you be willing to take on this role? O Yes O No

If yes, please state which forum you would prefer: _____

Advisory Panels

A few experienced MUN-Directors assist the students to formulate their ideas in the Security Council and the ICJ. If you wish to serve in such a panel, please check one of the following:

Figure 5 Paper form for THIMUN

capitals, first letter capital only or all lower case. In addition, the previous database did not support a student forum, which was a goal of this project.

3.5.1.1.1 Review of competing solutions

Three similar conferences with similar requirements are The Hague International Model United Nations (THIMUN) , Beijing International Model United Nations (BEIMUN) and Johannesburg Model United Nations (JOMUN)[14]. THIMUN is the largest Model United Nations in the world, with approximately 3000 delegates each year. The BEIMUN conference[15] is in some ways more similar to CACMUN because it is smaller (about 600 students) and attended almost exclusively by private international schools for expatriates. The JOMUN conference is also attended primarily by private schools for expatriate schools and is the most similar conference to CACMUN in terms of size – about 200 delegates.

In 2005, THIMUN created a PHP based website, similar to the one required for CACMUN. As previously mentioned, THIMUN has a full time staff and financial resources to hire and pay web developers. Their website sets the standard for other MUN conferences. Delegate information is entered via a PHP form, similar to what is desired for CACMUN. However, school and sponsor information is still returned via paper and fax. Some forms still

[14] http://www.aisj-jhb.com/jomun/default.htm
[15] http://www.beimun.org

need to be returned via paper so that signatures can be gathered for items such as financial commitment to the conference. Most MUN conferences, including THIMUN and CACMUN, call this financial commitment form “Form I”.

However, THIMUN still collected some information via forms that could be more efficiently collected via their website. For example, their “MUN Directors Form” collected the experience summary of all visiting MUN directors (adults), so they can be given appropriate assignments at the conference.

For the 2006 THIMUN conference, which is being organized in 2005, no online database is being used to collect information. All information from 5000 delegates from 300 schools is being collected by forms. THIMUN found the use of the online database in 2005 to be more time consuming than collecting the information by fax. Their online database was apparently separate from their day-to-day working database, and they found merging the two problematic – they eventually had to enter the data manually anyways.[16]

THIMUN’s student forum has been very successful, and provided a model for CACMUN. Students frequently use the forum to establish contact with

[16] Keizer, Tanya, “Re: Online Form II.” Email to the author. 10 Nov, 2005.

students from other schools, prior to coming to the conference. This greatly enhances the educational value of the conference, because students can quickly find an appropriate partner(s) to create and submit a resolution (new UN legislation) with.

The THIMUN forum[17] is implemented using the popular open source phpBB forum system. phpBB is an easily implemented, fully featured, free bulletin board system based on PHP and is compatible with most common databases including Microsoft Access and MySQL. It includes a registration system that allows users to register without any intervention by the forum moderators. A permission system also permits moderators to review, approve, edit and delete postings as desired.

A key feature of the THIMUN forum is the ability to subscribe to threads. Most students use their email daily, however, they are unlikely to check an MUN forum very often – once per week at the very most. Providing email notification of responses to threads greatly increases the utility of the forum

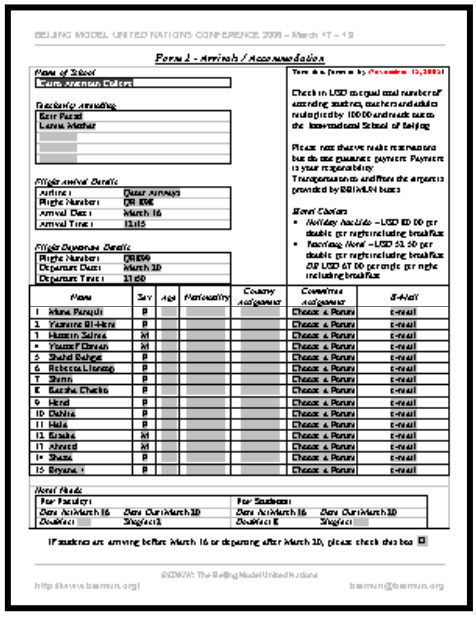


Figure 6 BEIMUN Form II for collecting delegate information

[17] http://www.thimun.org/dforum/

because students are immediately aware of any communication waiting for them and are much more likely to reply to a new message rather than one that they discover a week or two after it was posted.

BEIMUN does not currently use an online database. Information is collected via well constructed, but restrictive, Microsoft Word forms. The forms restrict user entry to designated places and do not permit modification of the form itself. The forms are downloaded by users, completed and then uploaded as Word Documents to a website — they are not put directly into a database. The forms also have some limitations. For example, the Form II (Figure 7) allows for a maximum of fifteen students to be registered. Fifteen is the 'maximum' delegation size to BEIMUN, but in some special circumstances delegations can be bigger than fifteen students. For example, CAC is bringing a 16th student this year as a student officer.

JOMUN has an attractive website. Navigation of the website is easy. However, they also do not have any online database. Registration forms are posted on the website in pdf format. Completed forms must be mailed or faxed to the host school in Johannesburg, South Africa.

JOMUN does, however, have an online forum. JOMUN uses the "Simple Machines Forum 1.0.3" (SMF 1.0.3)[18] This forum is proprietary, but currently free. SMF is PHP based and provides standard forum features, similar to phpBB, including an easy user management system, and the ability to subscribe to threads.

3.5.1.1.2 Requirements Analysis

Both business and technical requirements were identified as part of the analysis stage. Some possible requirements were purposely excluded to constrain the scope of the project, such as allowing online matching of delegate hosts and delegate guests. (Each CACMUN club member is required to house two visiting delegates for the duration of the conference. This greatly reduces costs for visiting schools.) Also a minimal set of features was planned for the forum. Each school has only one password for all their students (no individual logons), no ability to subscribe to threads, and no ability to designate moderators for each forum.

3.5.1.1.2.1 Business Requirements

Business requirements include:

- A website that advertises the CACMUN conference. It is imperative that the website present a professional look and be easily accessible.

[18] http://www.simplemachines.org/

- A website that provides a central location for distributing documents such as the CACMUN Instructional Guide and Leadership Application forms. The website must be easily navigable, so users can find these documents.
- An online database to gather delegate, sponsor and school information from visiting schools.
- An online forum to facilitate educational networking prior to the conference.
- An online email system to facilitate club communication amongst the fifty club members at CAC itself.
- Minimum disruption to the annual conference during the implementation of the system.
- No training requirements for users. The system must be exceedingly simple to use.

3.5.1.1.2.2 Technical Requirements

Technical requirements include:

- Use of PHP as a programming language. The current web host supports Perl or PHP. The use of either language is acceptable, however PHP will be used.
- Use of MySql as a database. The current web host host provides MySQL and the database administration tool “phpMyAdmin”.

- Use of the existing web service provider (http://icdsoft.com) and domain name (cacmun.net).

3.5.1.1.2.3 Training Requirements

The CACMUN website must be intuitive and require no training by users. Users include CAC students, students from visiting schools, directors from visiting schools and the CACMUN director.

Students from all schools will mostly use the non-interactive parts of the website for finding documents such as the CACMUN Instructional Guide and an application for chairing a forum (organ of the UN, for example the General Assembly). The main interactive feature they will use is the forum, however, the forum will be very simple and all the students are very familiar with forums already.

Directors from other schools will access a menu driven database to enter, delete and edit information. The menus will provide a limited number of options and the database entries will be easy to view with clear options to edit and delete each entry.

The CAC director is the designer of the system, so he does not need any training.

3.5.2 Design phase

Design of the system was planned for the entire month of July, but was actually completed mid-July, allowing the construction phase to being early.

3.5.2.1 Create website storyboard

The following is the planned website storyboard:

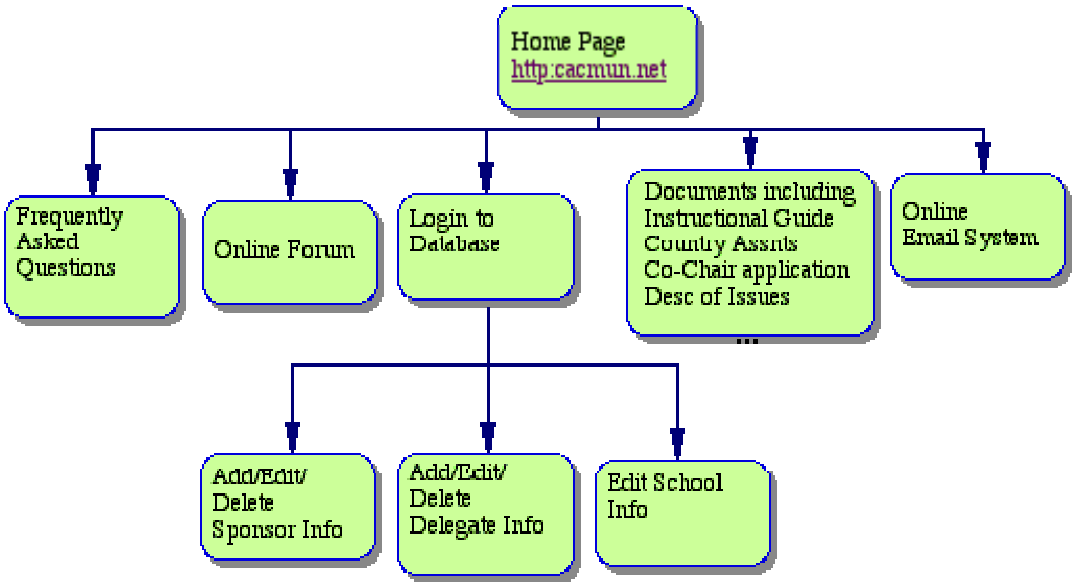


Figure 7: Website storyboard

3.5.2.2 Create Entity-Relationship diagrams

The following is the Entity-Relationship diagram for this project:

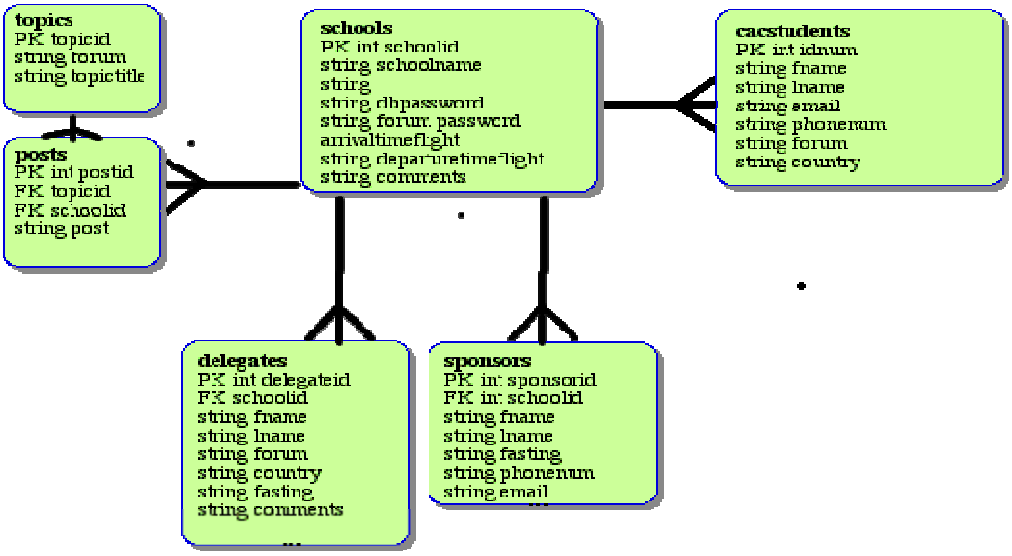


Figure 8: Entity-Relationship diagram

The schools entity is central to all other entities except for the topics entity, which has a one to many relationship with the posts entity. There exist zero to many cacstudents, sponsors, delegates and posts for each school.

3.5.3 Construction phase

Construction was scheduled from mid-June to mid-September, but was also completed ahead of schedule in early September. Development was done on an Apple Powerbook (laptop), using a local installation of Apache Webserver, MySQL and phpMyAdmin to develop and test all code.

3.5.3.1 Develop web pages

A shell of the website was completed earlier, in May 2005. Additional pages were completed in accordance with the website storyboard. The applications used were Macromedia Dreamweaver and Fireworks. Web pages were designed to make information easy to find and easy to edit when adding, changing or deleting information or web pages.

An index style home page was used, to make the hierarchy of the website as flat as possible. Almost all information and forms can be accessed directly from the homepage. A simple and easily editable design was created, to facilitate the addition of new pages when required. All static pages were completed by the end of August 2005.

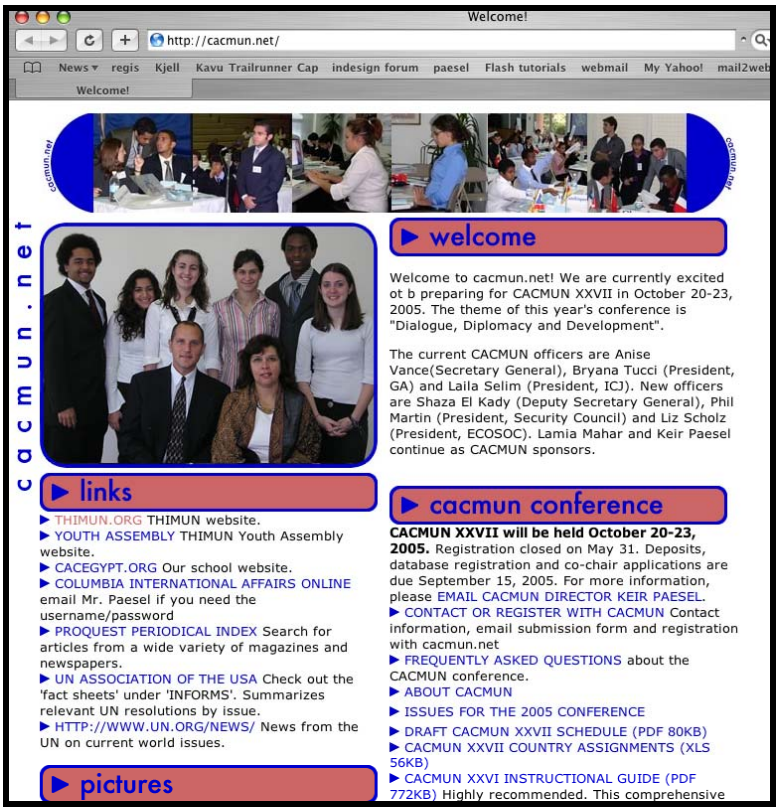


Figure 9: cacmun.net home page

3.5.3.2 Develop database

A MySQL database was created on the server hosting the cacmun website. phpMyAdmin was used to create tables in accordance with the previous ER diagram.

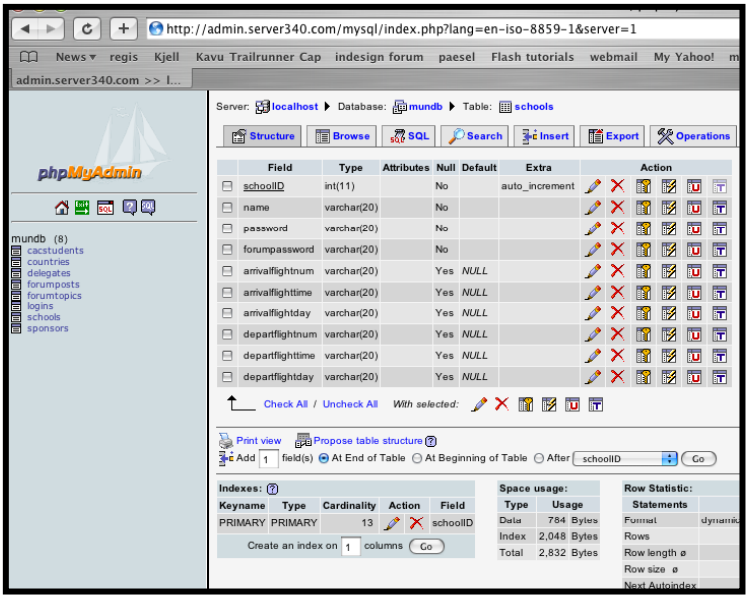


Figure 10 phpMyAdmin tool

3.5.3.3 Develop code

When possible, PHP code was developed using code generation features of Dreamweaver. However, these features proved somewhat problematic and rarely worked without modification. Tracing code without any kind of PHP debugger proved to be a challenge. Generally, a 'poor man's debugger' was used– print statements were inserted to monitor the flow of code execution and output variables in appropriate places.

The biggest programming challenge was to maintain the session state. Options included the use of session variables, cookies and URL parameters.

A session variable is used to record the appropriate schoolID during use of the registration system. The schoolID is obtained by a query on the 'schools' table, based upon the username and password used to log into the system. The schoolID is then used as a filter to display the delegates, sponsors, and school information for that school only. The use of a session variable for this purpose is appropriate because the variable is only available until the user logs out. Cookies could be used for this purpose, but would be vulnerable to problems with client side settings. URL parameters might work, but are less secure, as a user might change the schoolID code in the URL and then view and alter another school's data.

URL parameters are, however, used in the school forum. The user's schoolID is passed on as a parameter after login to the forum. After logging in, students chose from twelve topic based forums. Their choice of forum is also passed to subsequent pages as a URL parameter. Since students can chose any forum they want anyways, there is no reason why anyone would want to manipulate this URL parameter. It is conceivable that a student might want to change the URL parameter for their schoolID, in the advent that they chose to make a malicious or otherwise inappropriate posting. However, this possibility is unlikely and outweighed by the coding convenience of using a URL parameter. No problems were encountered during actual use of the system.

3.5.3.4 Create testing plan

A simple testing plan was created to test all functions of the website, particularly the registration system and the forum.

The following test plan was created in early August:

Test	**Result**
Modification of school data	
Add delegate data	
Edit delegate data	

Delete delegate data	
Add sponsor data	
Edit sponsor data	
Delete sponsor data	
Add CAC Student	
Edit CAC Student	
Send online email to all CAC students	
Send online email to specific CAC groups (such as delegates for the General Assembly)	
Create a new topic in the forum	
Reply to an existing topic in the forum	

Users have generally been assumed to be friendly, allowing for a minimal level of security including a minimum amount of user input validation. Therefore, testing of extreme or hostile data was not planned or executed.

3.5.3.5 Implement testing plan

Testing was conducted in August and September 2005 and was generally concurrent with construction. Code was tested as it was created. The website database was unused until mid-September, so all newly created

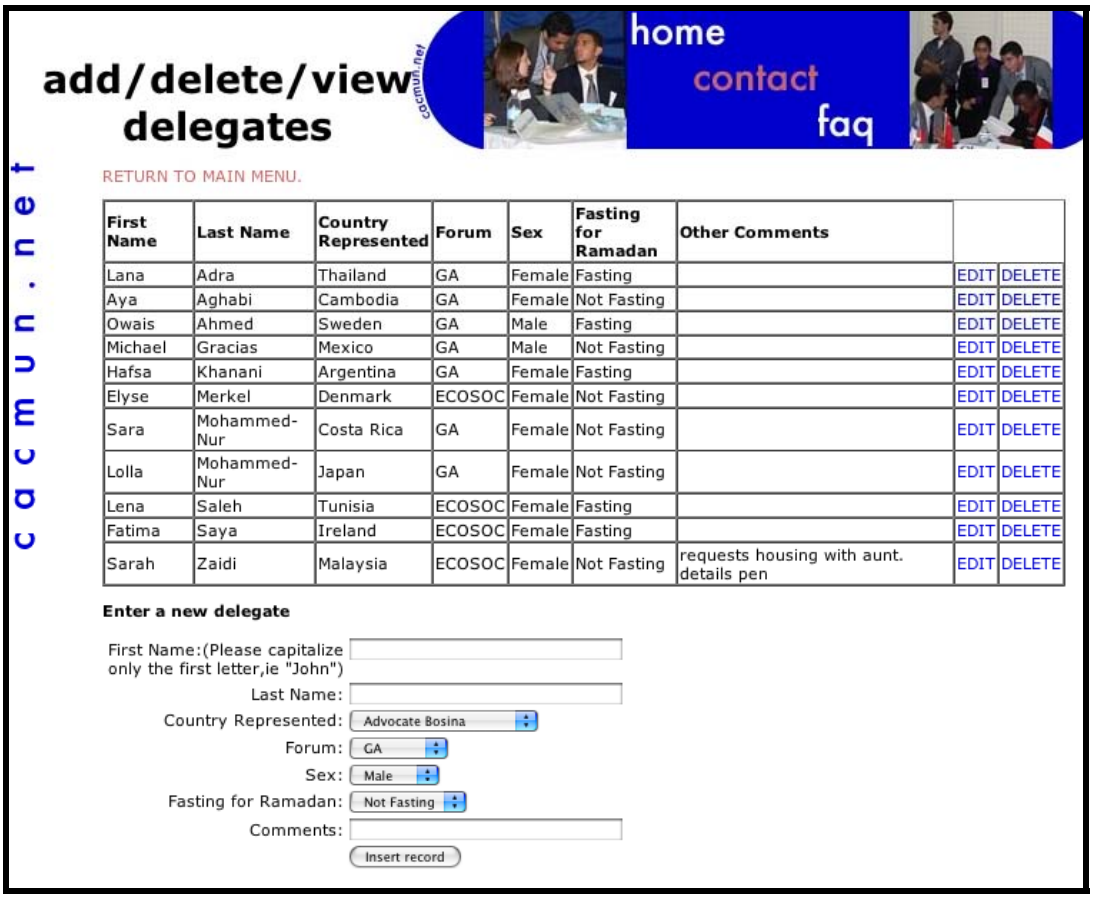
web pages were posted on the website and then tested. Generally, the results could be seen on the website itself, such as when delegates were added or deleted. However, when problems occurred, the phpMyAdmin was used to view and trace fields not displayed on the website, such as recordIDs.

The forum was the most problematic section. On new postings the appropriate forum topic ID number was not recorded in the database, making the new postings unavailable when subsequently viewing the forum. In this case, the problem proved to be an inappropriate and confusing identifier choice that also made the problem difficult to trace.

3.5.4 Implementation phase

As previously mentioned, a static shell of the website had been posted in May 2005. On September 15th, an email was sent to the ten visiting MUN schools, informing them of their database passwords (for directors) and

forum passwords (for students).



First Name	Last Name	Country Represented	Forum	Sex	Fasting for Ramadan	Other Comments		
Lana	Adra	Thailand	GA	Female	Fasting		EDIT	DELETE
Aya	Aghabi	Cambodia	GA	Female	Not Fasting		EDIT	DELETE
Owais	Ahmed	Sweden	GA	Male	Fasting		EDIT	DELETE
Michael	Gracias	Mexico	GA	Male	Not Fasting		EDIT	DELETE
Hafsa	Khanani	Argentina	GA	Female	Fasting		EDIT	DELETE
Elyse	Merkel	Denmark	ECOSOC	Female	Not Fasting		EDIT	DELETE
Sara	Mohammed-Nur	Costa Rica	GA	Female	Not Fasting		EDIT	DELETE
Lolla	Mohammed-Nur	Japan	GA	Female	Not Fasting		EDIT	DELETE
Lena	Saleh	Tunisia	ECOSOC	Female	Fasting		EDIT	DELETE
Fatima	Saya	Ireland	ECOSOC	Female	Fasting		EDIT	DELETE
Sarah	Zaidi	Malaysia	ECOSOC	Female	Not Fasting	requests housing with aunt. details pen	EDIT	DELETE

Figure 11 Webpage for entering, editing and deleting delegates

One school, the American School of Alexandria, entered their data almost immediately. Their data entry was successful, providing early verification that the database generally worked as designed and tested.

As additional schools entered their data, a couple minor problems were discovered. A couple schools had not been entered into the "schools" entity, so they were not able to login to the database. Adding the schools into the database easily rectified this. Also, the "country" field for the delegate entity had been set to 20 characters, which resulted in the truncation of some country names. For example, "The Democratic People's Republic of Congo" was truncated to "The Democratic Peopl". Since there were only a few occurrences of this kind of problem, the database was left unmodified for this school year.

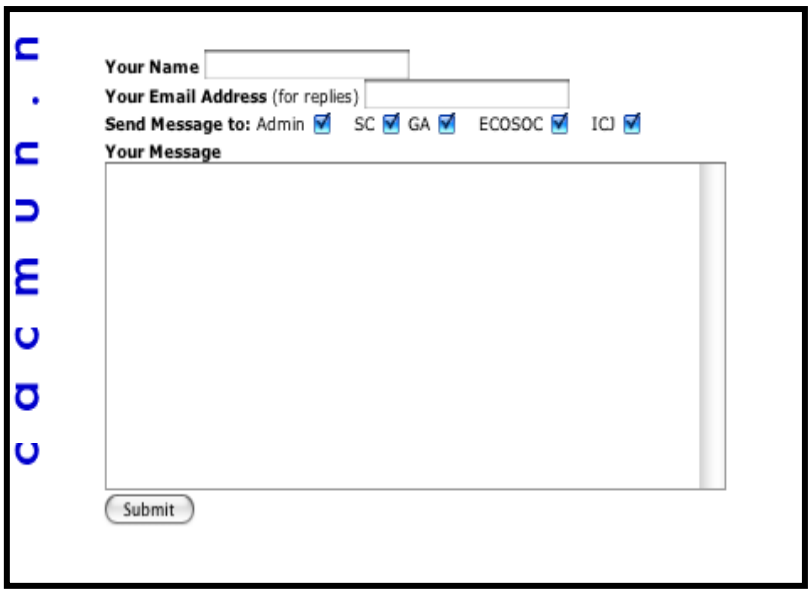
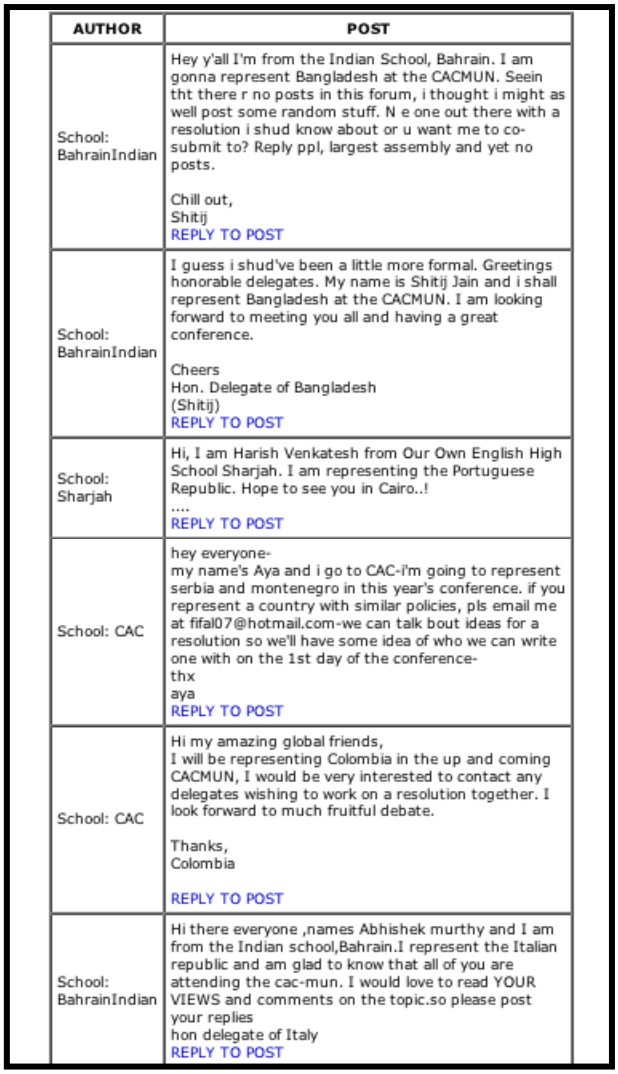


Figure 12 Email forum to allow student officers and club sponsors to email specific groups in the CACMUN club

An online email system was also implemented to improve communication amongst CACMUN club members. Club members entered personal data including their name, phone number, email, forum and country assignment. A login was created for student officers and club sponsors to access an online email form that allows the user to email all club members, or specific just specific subgroups. For example, the

General Assembly President can email just the students who are in that forum.

The last section of the system to be implemented was on the forum. The login for the forum was posted on September 20th. This section of the website proved to be the most problematic, resulting in several unanticipated errors that were minor, but nether the less consumed a great amount of time to trace. For example, when the forum was originally tested, the passwords for the data entry and the forum were the same. Just prior to implementation, the password for the forum was changed, to make it different from the password for data entry.



AUTHOR	POST
School: BahrainIndian	Hey y'all I'm from the Indian School, Bahrain. I am gonna represent Bangladesh at the CACMUN. Seein tht there r no posts in this forum, i thought i might as well post some random stuff. N e one out there with a resolution i shud know about or u want me to co-submit to? Reply ppl, largest assembly and yet no posts. Chill out, Shitij REPLY TO POST
School: BahrainIndian	I guess i shud've been a little more formal. Greetings honorable delegates. My name is Shitij Jain and i shall represent Bangladesh at the CACMUN. I am looking forward to meeting you all and having a great conference. Cheers Hon. Delegate of Bangladesh (Shitij) REPLY TO POST
School: Sharjah	Hi, I am Harish Venkatesh from Our Own English High School Sharjah. I am representing the Portuguese Republic. Hope to see you in Cairo..! .... REPLY TO POST
School: CAC	hey everyone- my name's Aya and i go to CAC-i'm going to represent serbia and montenegro in this year's conference. if you represent a country with similar policies, pls email me at fifal07@hotmail.com-we can talk bout ideas for a resolution so we'll have some idea of who we can write one with on the 1st day of the conference- thx aya REPLY TO POST
School: CAC	Hi my amazing global friends, I will be representing Colombia in the up and coming CACMUN, I would be very interested to contact any delegates wishing to work on a resolution together. I look forward to much fruitful debate. Thanks, Colombia REPLY TO POST
School: BahrainIndian	Hi there everyone ,names Abhishek murthy and I am from the Indian school,Bahrain.I represent the Italian republic and am glad to know that all of you are attending the cac-mun. I would love to read YOUR VIEWS and comments on the topic.so please post your replies hon delegate of Italy REPLY TO POST

Figure 13 Forum posting, showing pre-conference interaction between delegates from Egypt, UAE, Bahrain and two schools in Saudi Arabia

A coding error resulted in the forum login screen checking against the database password, instead of the forum password. When users (students)

tried to login using their forum password, they were redirected to the home page. Because the field name for the database password was ambiguous ("password", instead of "dbpassword", it took an unnecessary amount of time to trace this error.

3.5.5 Maintenance phase

The maintenance phase began in October. The database was iwas closed on September 23rd. The forum was closed at the beginning of the conference, on October 20th. After the database was closed, the data was extracted for use in the conference program and to create housing lists.

Maintenance over the next year will include changes to the static pages only, such as adding and deleting pages and files for use with other conferences that our school attends.

3.5.5.1 Conclude project

The project was concluded with the current iteration of the CACMUN website. The website, however, follows an annual development cycle that corresponds to the CACMUN conference itself.

From January to March of 2006, new requirements for next years iteration of the website will be made. These requirements will be based on the

successes and shortcomings of the current iteration and will reflect the observations of the CACMUN director's use of the system in 2005 and the feedback of the visiting directors and all the students who used the current system. The new requirements will be implemented from April to August of 2006.

3.6 Project methodology summary

A cyclical software development lifecycle was used. This methodology was appropriate for this project, because both the business and the technical requirements for the project were well defined. The project is cyclical because the CACMUN conference is held each year, therefore necessitating a registration and communication system. The annual iteration of the website provides an annual opportunity to improve the system. Improvements to the system reduce the amount of time required to administer the conference and increase the satisfaction of visiting students and sponsors.

4 Chapter Four: Project History

In October 2005, Cairo American College hosted the 27th annual CACMUN conference. The first CACMUN conference was held in 1978 and included just fifteen students from CAC only. Until five years ago, this conference averaged less than 100 students. Currently it averages approximately 200 students. This project was the current solution to the annual problem of managing the conference.

4.1 How project began

Each year, the CACMUN conference must register participants and distribute relevant information. In the last five years, this has become more challenging as the conference as grown and more schools have come from further away. Also during the last five years, however, the Internet has become an increasingly convenient tool to manage the conference. During the previous three years, a Microsoft .asp based website was used to register participants. When the developer and maintainer of the website left, an alternative and maintainable solution was required.

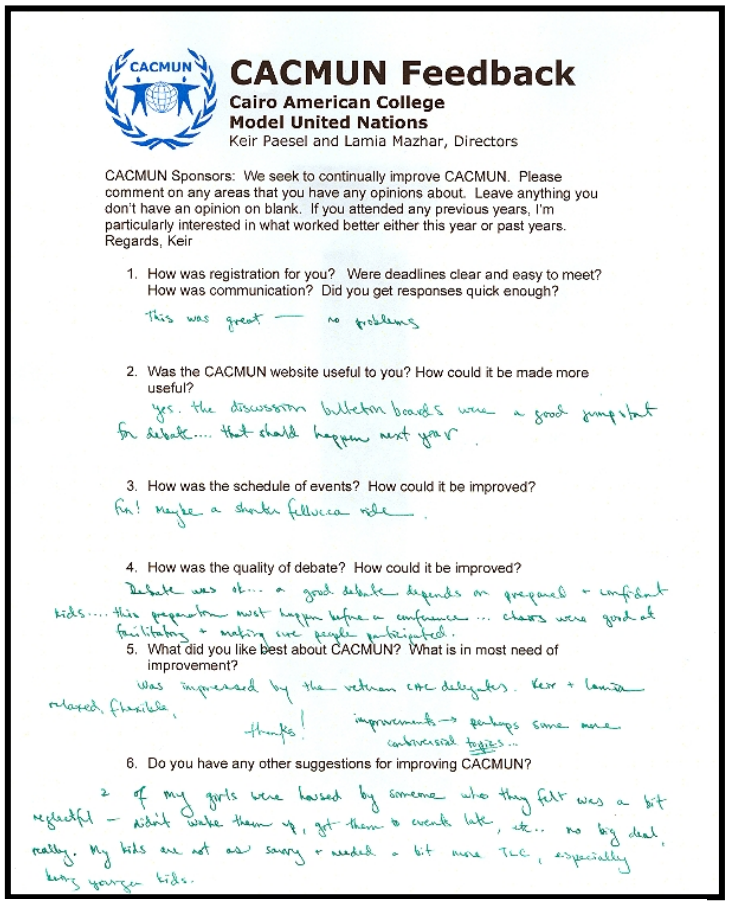
4.2 How project was managed

This project was small enough to be developed, tested and implemented in its entirety by one person – Keir Paesel. Keir Paesel is also an MUN

sponsor at CAC, so no further coordination was required to establish business requirements or to define the project.

4.3 Evaluation of the success of the project

CACMUN XXVII was successfully held from October 20-23, 2005. 197 students and sponsors participated from ten schools. Six schools attended from outside Egypt, including Italy, Syria, Bahrain, the United Arab Emirates, and Saudi Arabia. To evaluate both the conference and the success of the website, a feedback form was given to each school sponsor on the last day of the conference. Feedback, as well as subsequent emails, was overwhelmingly positive about both the conference and the website.



CACMUN Feedback

Cairo American College
Model United Nations
Keir Paesel and Lamia Mazhar, Directors

CACMUN Sponsors: We seek to continually improve CACMUN. Please comment on any areas that you have any opinions about. Leave anything you don't have an opinion on blank. If you attended any previous years, I'm particularly interested in what worked better either this year or past years. Regards, Keir

1. How was registration for you? Were deadlines clear and easy to meet? How was communication? Did you get responses quick enough?

this was great — no problems

2. Was the CACMUN website useful to you? How could it be made more useful?

yes. the discussion bulletin boards were a good jumpstart for debate.... that should happen next year.

3. How was the schedule of events? How could it be improved?

fine! maybe a shorter fellucca ride.

4. How was the quality of debate? How could it be improved?

Debate was ok... a good debate depends on prepared + confident kids.... this preparation must happen before a conference ... chairs were good at facilitating + making sure people participated.

5. What did you like best about CACMUN? What is in most need of improvement?

was impressed by the veteran core delegates. Keir + Lamia relaxed, flexible,

thanks! improvements → perhaps some more controversial topics...

6. Do you have any other suggestions for improving CACMUN?

2 of my girls were kissed by someone who they felt was a bit reflectful — didn't wake them up, get them a snack late, etc... no big deal, really. My kids are not as savvy + needed a bit more TLC, especially being younger kids.

Figure 14 CACMUN feedback form

Sponsors found the website a very useful organizational tool for the event. They were able to conveniently find all information and forms pertinent to the conference.

All students, sponsors and schools were registered with only minor problems, such as schools incorrectly identifying the forums that a couple students were in. The data was easily merged into required documents such as the conference program, community housing lists, and conference badges. However, some of the data needed to be unnecessarily checked due to the design of the database.

For example, a common problem that occurs each year is that schools erroneously enter the forum (General Assembly, Economic and Social Council (ECOSOC) or Security Council) that a student is assigned to. This is possible because schools find the list of countries and forums they are assigned from a spreadsheet that is emailed to them. (i.e. General Assembly Germany, or Security Council Russia). An improved database design would record the list of countries and forums assigned to each school in the database, and then only allow schools to select countries they have been assigned.

From a user perspective, the biggest difference between this year's website and the .asp solution used during the previous three years was the addition

of the student forum to facilitate educational exchange prior to the conference and promote delegate interaction on the first day. This forum had limited success. Four out of ten visiting schools used the forum. Two sponsors commented on the use of the student forum. One found the forum useful and the other did not. This forum will be enhanced and promoted in future iterations of the website.

The structure of the website was also simpler than the previous .asp website. The previous website generally had three levels, instead of the current two. For example, a link from the main page led to a 'documents' page that listed all available documents. The current website links to all available documents directly from the main page.

4.4 What changes occurred to plan?

Because this project was well defined with an inflexible implementation date (that of the conference), significant and successful effort was made to stay on or ahead of schedule. Few changes occurred to the plan. Some of the stages of the plan were completed more quickly than anticipated, allowing more time to be spent on later stages. Where possible, stages of the plan were completed simultaneously. For example, each small section of the online database was tested as it was developed.

4.5 How did the project end?

The project concluded with the successful completion of CACMUN 2005. The conclusion of the project marked the beginning of the ‘maintenance’ phase. The static pages of the website will be updated to distribute club and conference information relevant to the rest of the school year, such as external conferences that the CAC MUN club will be attending. Simple email forms will be used to collect contact details for next year from potential participant schools.

4.6 Lessons learned

Planning out the scope of the project helped greatly. The project was focused on what needed to be done this year, leaving additional improvements to future years.

In many cases, poor identifies were chosen for variable names in the PHP code. This made code development and troubleshooting more difficult than necessary. More emphasis on meaningful and consistent identifiers would be beneficial.

The most important part of testing is user testing. Although the code developer tested each section of code with a variety inputs, a few problems still occurred when users interacted with the system. Users also observed

minor problems that escaped the attention of the developer, such as the truncation of long country names.

Research proved to be very useful when planning the scope of the CACMUN website. Choosing the appropriate technologies facilitated the ease of development and testing. Comparing the websites of other MUN conferences allowed the CACMUN developer to incorporate the most useful features of other websites, such as forums, and to choose appropriate and proven technologies (such as PHP) and avoid less successful elements of other MUN websites, such as forms that must be mailed or faxed back to the conference.

Database planning was adequate, but could have better. An improvement on the previous .asp solution was the identification and elimination of unnecessary data. For example, the previous database had several fields for housing purposes that were related to diet, such as ‘eatsPork’ (a consideration in the Middle East, and ‘vegetarian’. These and other fields, such as ‘smoking’, were reduced to one comment field. This made data entry less time consuming.

Better field names would have aided troubleshooting. Some additional entities fields would have prevented data entry problems. For example, adding a schoolID field to each country in the ‘counties’ entity would have

made it possible to restrict schools to selecting only those countries assigned to their school, therefore improving data quality. However, since most countries have representatives in multiple forums (i.e. General Assembly, ECOSOC and the Security Council), this would have made the database more complex.

Code generation tools, such as those provided included in Macromedia Dreamweaver, are often of very limited use. These tools were generally used where possible, but often had to be modified and debugged so much that it might have been faster and simpler to not use them.

4.7 Project summary

The project was conducted from June to October 2005. No major difficulties were encountered during the project. Overall the project was a success. Both student and adult users found the website easy to use. The

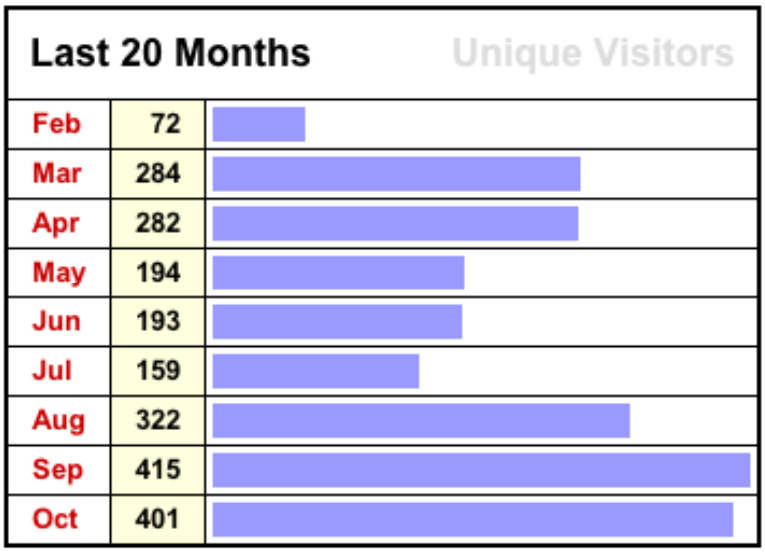


Figure 15 Cacmun.net traffic summary, showing that the website was heavily used during September (registration) and October (conference preparation.)

resulting website will be easy to maintain and upgrade for future CACMUN conferences.

5 Chapter Five: Lessons Learned

A variety of lessons were learned from this project experience, ranging from narrow technical lessons to broader project management concepts. Technical lessons learned included observations regarding coding and debugging and database development. These lessons were detailed in section 4.6.

5.1 What was learned from the project experience?

On a project level, this project was an excellent experience in implementing the Software Development Cycle. The project also provided an opportunity to practice technical research and technical documentation. Documenting this project by writing this paper was greatly facilitated by starting with a detailed outline.

On a technical level, the developer was able to enhance his skills in designing and implementing databases, writing and debugging PHP code and designing web pages.

5.2 What should have been done differently?

More careful design choice of identifies would have facilitated troubleshooting. A few additional fields in the user forum would have made

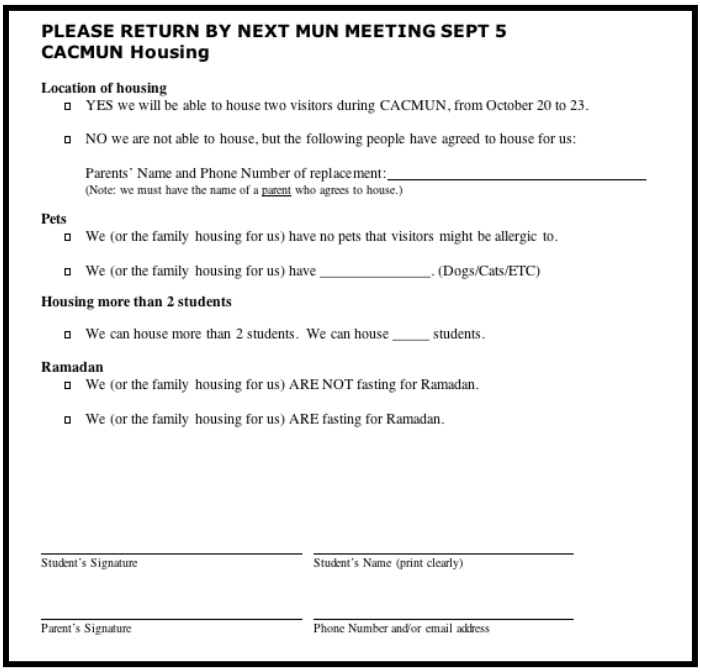
the forum user-friendlier. For example, the forum postings did not have a field for stating the country the forum poster was representing, making it difficult to quickly scan the forum for relevant postings.

5.3 What would be the next stage for this project?

In the short term, the database needs to be expanded to collect additional information and to allow more intelligent input through web pages. For example, in its current form, each country is assigned to a school on an Excel spreadsheet (posted on the website). The school then enters in delegate information, including the country they are representing. Currently, the school chooses each delegates country from a drop down list of all possible countries. In the future, countries will be assigned to schools in the database (not in an Excel spreadsheet) so the drop down country list for a delegate will include only those countries that are assigned to a school and have not already been assigned to a delegate. This will reduce the common error of a school mistakenly assigning the wrong country to a student.

Currently, guest housing information is collected online, but host information is collected by paper and then entered into an excel spreadsheet. Allowing online entry of this information would save time and reduce errors that occur during data entry. Each CAC student will be given a unique login that will allow them to enter appropriate required housing information, such as how many students they can house, gender preferences, whether or not they

have any pets that the guest might be allergic to, etc… This information is currently collected on a paper form.



PLEASE RETURN BY NEXT MUN MEETING SEPT 5
CACMUN Housing

Location of housing

- ☐ YES we will be able to house two visitors during CACMUN, from October 20 to 23.
- ☐ NO we are not able to house, but the following people have agreed to house for us:

  Parents' Name and Phone Number of replacement:_____
  (Note: we must have the name of a parent who agrees to house.)

Pets

- ☐ We (or the family housing for us) have no pets that visitors might be allergic to.
- ☐ We (or the family housing for us) have _____. (Dogs/Cats/ETC)

Housing more than 2 students

- ☐ We can house more than 2 students. We can house _____ students.

Ramadan

- ☐ We (or the family housing for us) ARE NOT fasting for Ramadan.
- ☐ We (or the family housing for us) ARE fasting for Ramadan.

_____ _____
Student's Signature Student's Name (print clearly)

_____ _____
Parent's Signature Phone Number and/or email address

Figure 16 Housing form used in 2005

Each school currently has two passwords; one for use by the director to access the online database and the other for students to access the forum.

In the future, CAC students will gain their own username and password through online registration. This password will enable them to update their own information in the database, including housing information.

The current system has an email address for each CAC student, which is used for broadcast emails to the CAC club. However, the students have no easy and effective way to keep their email address current. This email system proved redundant, as the school already has a grade reporting system, called edline[19], that includes the email addresses of both students

[19] http://edline.net

and parents. An easy way to email student members is to create a 'class' on this system. This has the disadvantage over this year's system that student officers cannot be given access to this system and it is not easy to email specific subgroups of MUN. However, it has the overriding advantage that parent emails are included and the students have a strong incentive to keep their email current – if they don't, they have no way of knowing what their school grades are. The current (developed) email system also does not permit individual MUN members to be emailed, the edline system does.

The forum developed for the current system is not as feature rich and convenient as some freely available forum systems such as phpBB and SMS. In next years iteration of the website, phpBB will be used to make the forum more individualized (individual as opposed to school logins), convenient (ability to subscribe to threads), powerful (the ability to appoint student officers as moderators of forums) and visually appealing. Because phpBB is a professional and widely used product, it will also be more reliable and secure.

In two to three years, the code is likely to be ported to Java and the website will be moved to CAC's web servers. This will eliminate the costs of maintaining a website and provide a more flexible programming language to promote additional features on the website. The database may also be switched to Filemaker Pro, which the school already owns. Filemaker Pro

may offer a more convenient interface than phpMyAdmin, although this needs to be researched.

5.4 Conclusions and recommendations

The CACMUN website was successful in promoting and managing the website. Overall, the project was an excellent experience in interactive website development and project management including documentation. Future development of the website will capitalize on recently completed work to make an even more powerful, flexible and targeted solution to the challenge of hosting a Model United Nations conference.